

# SCIENCE NEWS-LETTER

*The Weekly Summary of Current Science*  
A SCIENCE SERVICE PUBLICATION



\$5 a Year

15c a Copy



August 9, 1930



## A LITTLE FISH WITH A BIG HAND

*It Clings to Drifting Weeds in the Sargasso Sea*

(See page 82)

Vol. XVIII

No. 487

# Worst Drought Sets Low Water Records

Meteorology

## Rivers Famous For Floods Now Drying Up

**N**EW records for low water levels on the Mississippi and other mid-western rivers are being set as the worst drought in the history of the Weather Bureau continues to threaten crops. Rivers which were breaking records for height of water a year or so ago are now far below normal.

At St. Louis, for instance, the gages of the Weather Bureau show a height of only 3 feet, the lowest ever recorded at this time of year, according to M. W. Hayes, in charge of the work on rivers and floods. Normally, said Mr. Hayes, the level is something like 12 or 14 feet at the beginning of August. This height is measured

above the zero of the gage, which is set approximately at the lowest possible level.

All along the Mississippi River system low levels are being recorded, he said. At Davenport it is 2 feet 7 inches; at Memphis 4 feet 8 inches; at Cairo, 9 feet 7 inches; at Vicksburg, 8 feet 4 inches and at New Orleans, one foot three inches. At Kansas City the Missouri is 5 feet 8 inches and at Cincinnati the Ohio is 11 feet 8 inches.

Preliminary reports reaching the Weather Bureau show that this drought is the worst ever recorded, said J. B. Kincer, in charge of the Bureau's work on the relation between weather and crops. None of the Bureau's records show such a defi-

ciency of rainfall. Though the cool weather that has now come over the middle west will retard the deterioration of the crops, it will not help materially. What is needed is rain and none is in sight.

As indicating the severity of the drought, Mr. Kincer stated that the preliminary figures for July show that the lower Mississippi Valley had only a fifth of the normal rainfall during the month. The Ohio Valley has had only a third to a half of normal, the southern plains of Texas only a fifth to a quarter, and the northern plains a third to a half. During the early part of the year, the rainfall was also much less than normal and this has aggravated the situation.

Science News-Letter, August 9, 1930

## Smarter Hand

**S**TUDENTS at Temple University, Philadelphia, are busy learning to twirl wands and perform other feats of dexterity in an effort to determine what difference there is in the rate of learning between the right and left hands.

The experiments are being conducted under the direction of Dr. Thaddeus L. Bolton, head of the department of psychology. They test the theory that students can learn with greater speed and ease if not forced to use the wrong hand.

"There are many persons in whom the two hands seem to have equal learning power," Dr. Bolton explained. "They respond with equal accomplishments for equal amounts of practice. In all other cases one hand learns more and faster than the other."

The study, Dr. Bolton concludes, points out the futility of training strongly right- or left-handed persons to play the piano or in other skills requiring the use of both hands.

Psychology

Science News-Letter, August 9, 1930

## The Answer Is

## In This Issue

What is traveling 15 miles a second on a visit to the earth? p. 85—Are Stone Age tools being made now? p. 85—To what birds did the North American Indians apply game laws? p. 86—What part of normal rainfall has fallen during recent months in the United States? p. 82—In what ways is the R-100 considered to be better than preceding rigid airships? p. 93—How high could a man jump if he were as small as a flea? p. 94—Have oil burning motors been successful in airplanes? p. 83—Will there be more prison outbreaks? p. 91—How can imitation sunlight best fool office workers? p. 91—What should you do if you find a tropical opossum? p. 89—How bright will the planet Venus be in August? p. 90.

## A Fish With Hands

**A**FISH of more than ordinary piscine talent is sometimes found in the drifting masses of gulfweed or *Sargassum* in the great mid-Atlantic eddy. It is only a little fish, a couple of inches long, but it can use its two pectoral fins for some of the functions of hands.

It can contract them laterally, though the stiff rays prevent the longitudinal rolling allowed by jointed fingers of men and monkeys. Even this limited prehensile power, however, is highly useful to the little fish, for with one fin or the other it often clings to stalk, blade or float of the drifting weed in whose shelter it lives. Spread out and held downward, as in a gesture of emphatic denial, these fins serve the usual vertical steering function even more efficiently than do the pectorals we see on familiar fishes.

The picture of this fish on the cover is reproduced by permission of the publishers of Wilfrid Swancourt Bronson's book, "Fingerfins."

Ichthyology

Science News-Letter, August 9, 1930



SCIENCE NEWS-LETTER, The Weekly Summary of Current Science. Published by Science Service, Inc., the Institution for the Popularization of Science organized under the auspices of the National Academy of Sciences, the National Research Council and the American Association for the Advancement of Science.

Edited by Watson Davis.

Publication Office, 1918 Harford Ave., Baltimore, Md. Editorial and Executive Office, 21st and B Sts., N. W., Washington, D. C. Address

all communications to Washington, D. C. Cable address: Scienservc, Washington.

Entered as second class matter October 1, 1926, at the postoffice at Baltimore, Md., under the act of March 3, 1879. Established in mimeographed form March 13, 1922. Title registered as trade-mark, U. S. Patent Office.

Subscription rate—\$5.00 a year postpaid. 15 cents a copy. Ten or more copies to same address, 5 cents a copy. Special reduced subscription rates are available to members of the American Association for the Advancement of Science.

In requesting change of address, please give old as well as new address.

Advertising rates furnished on application.

Copyright, 1930, by Science Service, Inc. Reproduction of any portion of the SCIENCE NEWS-LETTER is strictly prohibited since it is distributed for personal, school, club or library use only. Newspapers, magazines and other publications are invited to avail themselves of the numerous syndicate services issued by Science Service, details and samples of which will gladly be sent on request.

THE OIL burning Diesel is going out from the ponderous power plant to become a speedy, compact airplane motor. And tragic death has stalked both the inventor of the Diesel and the man who did most to remake it for use in the air.

By Watson Davis

THERE is a new breed of engine taking to the air, feeding on fuel oil, scorning carburetor, magneto and spark plugs, eliminating the fire hazard of aviation and promising cheaper air travel.

Thank Rudolf Diesel, German engineer, who late in the last century patented the type of internal combustion engine now inseparably linked with his name. But even more thank Capt. Lionel M. Woolson, Packard aeronautical engineer, whose tragic death during a blinding snowstorm while flying in an airplane powered with his own Diesel aircraft engine is mourned by the aeronautical industry.

Even in his death Capt. Woolson proved conclusively one advantage of the Diesel aircraft engine. When the airplane carrying him and two pilots to the New York airplane show met disaster due to the weather, there was no fire from fuel such as is usually the case when a gasoline powered airplane crashes.

As Capt. Woolson was fond of demonstrating to his engineer friends, that Diesel fuel oil, such as is burned in many home heating furnaces, cannot be ignited or exploded by a lighted match tossed into it. It will actually extinguish a flame when poured over it. Only when properly atomized, as it is when it is sprayed into the cylinders of the engine, does the oil ignite and furnish power.

"Thousands of hours of ground and flight testing have conclusively proved that it is impossible to accidentally ignite the fuel oil used in the engine," Capt. Woolson said a few days before his death. "It is virtually essential

Woolson, left, one of the inventors tragedy stalked, and Walter Lees, test pilot, in front of their Diesel-motored plane "after six hours and fifty minutes uneventful flight consuming four dollars and sixty-eight cents worth of furnace oil."

# We Are Taking Wing With Engines That Burn Fuel Oil

Aviation—Engineering

to atomize this fuel into a very fine spray before it can be ignited at all, and at no time has it been possible to start a fire under any conditions simulating the result of an airplane crash or accidental breakage of the fuel line in flight."

The adapting of the Diesel engine principle to aeronautical use through Capt. Woolson's efforts represents a spectacular leap of the oil engine from the field of heavy duty power and marine use to the air where the lightest and most mobile of machinery is necessary.

## In Air First

No automobile commercially available in America is powered by a Diesel engine. Diesels in ships and powerplants weigh many pounds for each horsepower they produce. And yet the Packard Diesel, nursed by Capt. Woolson's effort and genius, weighs only 2.26 pounds for each of

the 225 horsepower it pours into the propeller. Diesel is in the air before it travels over roads.

To the casual observer the new engine resembles the conventional sort of air-cooled radial airplane engines that burn gasoline and now carry the bulk of the world's air traffic. Closer inspection will show that its nine cylinders have fewer accessories on them; there is no electrical ignition and each cylinder has but a single valve.

Diesels and ordinary gasoline engines have different modes of action. When the gasoline internal combustion engine sucks in a mixture of air and gasoline, the Diesel four-cycle engine is taking in ordinary atmospheric air only. Then when the air-gasoline mixture in the conventional engine is compressed into smaller space by the piston moving upward, the equivalent action in the Packard Diesel so compresses the air in the cylinder that it





heats up to a temperature of 1,000 degrees Fahrenheit.

The next step in the case of the gasoline engine is for an electric spark to ignite and explode the compressed fuel mixture, driving the piston downward and applying power to the crankshaft. Up to this point in the Diesel operation there has been no fuel in the engine at all and that is the next thing that happens.

A spray of fuel oil is injected into the top of the cylinder and spontaneously ignites from the heat of the compressed air. Thus the necessity of an electric spark is eliminated. One of the secrets in successful Diesel operation is the exact timing of the oil spray in such a way that the oil is injected and burned gradually during the stroke of the piston. The next upward stroke of both engines pushes the burnt gases out of the cylinders, and in the Diesel the same valve that admitted the air in the first stroke also serves as the exhaust exit. This dual use of a single valve makes for simplicity of design.

#### Latest Application

The principle of the Diesel engine goes back in history thirty-five years to the time when Rudolf Diesel took out his German patents. Since then heavy oil engines have invaded successfully nearly every power field except the automotive. The U. S. Shipping Board spent \$25,000,000 in 1923 in converting its steamers to Diesel motorships.

Diesel engines have come into use for driving locomotives of a new type. The lightest of such engines weighs dozens of pounds for each horsepower produced. To the airplane builder looking for power for his craft they seemed impossibly clumsy and heavy. It remained for Capt. Woolson and his staff, headed by Dr. Hermann Dörner, Diesel designer from Germany, to apply Diesel's principles to an airplane engine.

Engines had been Capt. Woolson's companions since the days of 1905, when fresh from a London schooling, he began servicing Mercedes automobiles in this country. Born in Los Angeles, educated in Seattle's public schools, Capt. Woolson received his secondary school education in London because his parents moved there.

The years 1908 to 1912 found Capt. Woolson in charge of a large fleet of trucks at West End, N. J., and in those days of less perfect automobiles that was a job that is more

difficult than it would be today. This led to motor appliance design and when America entered the World War, Capt. Woolson was one of the famous group of engineers at Dayton who put the power into Uncle Sam's war wings. He was in charge of experimental ground and flight testing of aircraft engines at famous McCook Field. With the war over he became research engineer for the Packard company.

#### A Famous Designer

Before his successful production of his heavy oil aircraft engine, Capt. Woolson had been at the forefront of gasoline engine design. He is the man who made possible present lightweight water-cooled gasoline engines by a new type of cylinder construction and a shortening of the engine. He built powerful aircraft engines which at the time held world records. His engines were used in motorboats, to power the U. S. Airship Shenandoah, and to propel U. S. Army tanks. The Packard X intended for Lieut. Al Williams' racing plane was at the time Capt. Woolson produced it the most powerful aircraft engine. Its four banks of six cylinders each gave 1,500 horsepower.

With such a record of experience, Capt. Woolson tackled the problem of putting the compression-ignition engine into the air. There was no fanfare of engineering trumpets when he and his engineering staff began their task three years ago. Not until the engine had been flight tested did rumors as to accomplishments emanate from Detroit.

Other efforts toward light-weight Diesels were based upon the idea that satisfactory results could be obtained in an aircraft compression-ignition engine only if the pressures, and consequently the stresses in the engines, were kept comparatively low. Pressures of from 500 to 800 pounds per square inch were believed to be the limit. But Capt. Woolson's design allows maximum cylinder pressures somewhat in excess of 1,200 pounds per square inch.

There is nothing slow about the engine when it is operating at normal load, for it whirls 1,950 revolutions per minute. Nevertheless it can be throttled down to run only 250 r.p.m. The pump that injects the fuel oil into the cylinder operates under the high pressure of 6,000 pounds per square inch and it has only four thousandths of a second in which to

shoot the charge into the hot, highly compressed air. Some of the parts of the pump need to move with nearly incredible swiftness and accelerations reach 15,000 feet per second per second or nearly 500 times that of gravity.

#### \$4.68 Success

When last year Capt. Woolson took the Packard Diesel on its first long cross-country flight from Detroit to Langley Field, Va., where aeronautical engineers were gathered for the annual inspection of the National Advisory Committee for Aeronautics laboratories, he telegraphed his success laconically: "Arrived O.K. after six hours and fifty minutes uneventful flight consuming four dollars and sixty-eight cents worth of furnace oil."

Since then the engine has been given extensive flight tests at the factory and in actual use and it has won its badge of engineering respectability, the Department of Commerce Approved Type Certificate.

One of the first things that laymen and engineers noticed when they observed the Diesel in flight was a trail of black smoke from the engine. Like all smoke it was an indication of incomplete combustion of the fuel, but by wasting some fuel the engine can be overloaded and be made to give a tenth more power for a fifth more fuel. This is very useful to the pilot in taking off or climbing.

Some Diesel engines are particularly hard to start but the Packard Diesel starts about like a gasoline engine. An inertia starter, now common equipment on less novel airplane engines, is used and the energy stored up by hand cranking the small fly wheel of the starter is sufficient to turn over the engine several times and set it going. In the early days of flight testing, Capt. Woolson experimented with several other types of starters, especially one that used the explosion of a blank shotgun shell to kick off the engine.

With radio becoming a necessity in aircraft operation and with the extension of radio beacons and communication between air and ground, great care is needed in shielding spark-ignition gasoline engines so that they will not interfere with the radio signals. As compression-ignition of the Diesel eliminates all electrical sparks, there is no interference. As Capt. Woolson wrote:

"The fact that (Turn to page 92)

# Little Eros on Way to Visit Earth

*Astronomy*

## Astronomers Eagerly Await Close-Up of Minute Planet

**M**AINTAINING an average speed of 15 miles per second, a planet named Eros is on its way to visit the earth. Eagerly awaited by astronomers all over the world, this small but fascinating member of the solar system will remain in the neighborhood of the earth from October, 1930, to May, 1931.

The present visit is the most intimate that earth astronomers have enjoyed since the discovery of the eccentric little planet in 1898. Never quite visible to the naked eye, this coy little visitor will be easily reached by field glasses and small telescopes during several months of its stay in our vicinity.

Though believed to be only about 15 miles in diameter, Eros is the most valuable and useful member of a family of 1100 asteroids. Owing to the fact that it will come within 16,700,000 miles of the earth or one-

fifth the sun's distance, it will be pulled out of its elliptic path by the attraction of the earth. By carefully measuring the amount of this deviation, astronomers can determine the extent of the earth's gravitational power, and compute the mass or weight of the earth more accurately than it has been ascertained by other methods. When the number of tons of material contained in earth are known exactly, the sun's distance can be determined by comparing its attraction for Eros with the earth's influence.

### Studied For Years

Many astronomers, especially R. H. Tucker at Lick Observatory and A. Kopff of Berlin, have devoted years to the task of preparing accurate and dependable positions of the stars near the predicted path of Eros in order that the observations of the

planet may be measured with the greatest exactness obtainable.

Early in October, Eros will appear in the constellation of Auriga, having a magnitude of ten, or a hundred times dimmer than fifth magnitude stars which are easily discernible to the unaided eye on a clear night. Passing south of the familiar great dipper of Ursa Major and through Leo Minor during December, Eros will move east and southward. By January 14 it will apparently stand still for a few days at the extreme eastern limit of the loop which its apparent orbit describes among the stars. This is due to the fact that we view it from a rapidly moving earth.

At its stationary point east, Eros will be only 14 degrees north of the celestial equator in the constellation Leo, and will be of the seventh magnitude, or 18 times brighter than in October.

Moving rapidly southward, the tiny planet will cross the equator on January 27 and will reach its closest point to the earth on February 17. Seen from a latitude of 40 degrees north, Eros will then be only 30 degrees above the southern horizon, or a third of the way from the horizon to the zenith.

### 70 Times As Far As Moon

Eros will then be 70 times as far away as the moon. The constellation Antlia in this part of the sky has no stars brighter than fourth magnitude.

On March 15, Eros will reach the western end of the loop and its farthest point south of the equator. During this part of its visit it will be observed by astronomers of the southern hemisphere, particularly in South Africa, for whom it will be high in the sky.

Retracing its northerly path but rapidly diminishing in brightness, the small planet will say farewell to the earth in May and vanish, not into outer darkness, but into the brightness of the Sun's radiation.

*Science News-Letter, August 9, 1930*

A white flowering bulb from South Africa, called the chincherichee, has been introduced to this country, and is expected to gain favor as a novelty.

## Stone Age Tools Being Made Now

*Archaeology*

**I**N Pasadena, California, lives a man who can turn out arrow heads, knife blades, spear heads, and scrapers, chipped from stone or glass, that surpass the workmanship of the primitive stone workers of five thousand years ago.

J. A. Barbieri, of Italian descent, has been practising stone chipping since he was a boy. Now he is an expert at fashioning beautiful blades from hard brittle obsidian and chert. His arrowheads are graceful and more delicate than the average Indian arrowhead found in the field. In fact, few Indian stone workers would be able to compete, either in workmanship or speed, in a match with Mr. Barbieri. He can fashion a serviceable arrow head from rough material in less than twelve minutes. In thirty minutes he can flake a blade that is a work of art.

His tools are simple: deer antler, sharpened bits of bone or ivory and sharpened copper wire. He works his blades on his thigh, as did the Indian workman of other days. With a pebble hammerstone he roughs out his implement blanks.

Many people believe that the Indians fashioned their arrowheads by heating the flint or chert and pipping off flakes by dropping water upon the red-hot stone. Mr. Barbieri confessed that as a boy he too believed that tale. He heated a chunk of flint in the fire but he didn't get a chance to drop water on it. It exploded too fast.

The "lost art" of flint chipping, has never been lost, for at this very moment there are beautiful red glass arrowheads of fair workmanship offered for sale in western cities, turned out by some unknown artisan in either Utah or Nevada. The arrowheads are sold by curio dealers as being of "red obsidian made by a lost tribe of Aztecs." They are modern, fraudulent specimens and no more resemble red obsidian than a whale resembles a humming bird.

Mr. Barbieri does not sell his products as genuine specimens. He fashions blades as a hobby and at some future date may write a treatise on flint chipping which should be a real addition to our fund of scientific knowledge.

*Science News-Letter, August 9, 1930*



# The Passenger Pigeon

## —A Science Classic

*Ornithology*

*THE PASSENGER PIGEON. By John James Audubon. From Ornithological Biography, vol. 1, 1831.*

THE multitudes of wild pigeons in our woods are astonishing. Indeed, after having viewed them so often, and under so many circumstances, I even now feel inclined to pause and assure myself that what I am going to relate is fact. Yet I have seen it all, and that too, in the company of persons who, like myself, were struck with amazement.

In the autumn of 1813, I left my house at Henderson, on the banks of the Ohio, on my way to Louisville. In passing over the Barrens, a few miles beyond Hardinsburg, I observed the pigeons flying from northeast to southwest in greater numbers than I thought I had ever seen them before, and feeling an inclination to count the flocks that might pass within the reach of my eye in one hour, I dismounted, seated myself on an eminence, and began to mark with my pencil, making a dot for every flock that passed. In a short time finding the task which I had undertaken impracticable, as the birds poured in in countless multitudes, I rose, and counting the dots then put down, found that 163 had been made in 21 minutes. I traveled on, and still met more the farther I proceeded. The air was literally filled with pigeons; the light of noonday was obscured as by an eclipse; the dung fell in spots, not unlike melting flakes of snow; and the continued buzz of wings had a tendency to lull my senses to repose.

### The Bird Legions

Whilst waiting for dinner at Young's inn, at the confluence of Salt-River with the Ohio, I saw, at my leisure, immense legions still going by with a front reaching far beyond the Ohio on the west, and the beechwood forests directly on the east of me. Not a single bird alighted; for not a nut or acorn was that year to be seen in the neighborhood. They consequently flew so high, that different trials to reach them with a cap-

ital rifle proved ineffectual; nor did the reports disturb them in the least. I can not describe to you the extreme beauty of their aerial evolutions, when a hawk chanced to press upon the rear of a flock. At once, like a torrent, and with a noise like thunder, they rushed into a compact mass, pressing upon each other toward the center. In these almost solid masses, they darted forward in undulating and angular lines, descended and swept close over the earth with inconceivable velocity, mounted perpendicularly so as to resemble a vast column, and, when high, were seen wheeling and twisting within their continued lines, which then resembled the coils of a gigantic serpent.

### Pigeon Pie

Before sunset I reached Louisville, distant from Hardinsburg 55 miles. The pigeons were still passing in undiminished numbers, and continued to do so for three days in succession. The people were all in arms. The banks of the Ohio were crowded with men and boys, incessantly shooting at the pilgrims, which there flew lower as they passed the river. Multitudes were thus destroyed. For a week or more, the population fed on no other flesh than that of pigeons, and talked of nothing but pigeons. The atmosphere, during this time, was strongly impregnated with the peculiar odor which emanates from the species.

It is extremely interesting to see flock after flock performing exactly the same evolutions which had been traced, as it were, in the air by a preceding flock. Thus, should a hawk have charged on a group at a certain spot, the angles, curves, and undulations that have been described by the birds, in their efforts to escape from the dreaded talons of the plunderer, are undeviatingly followed by the next group that comes up. Should the bystander happen to witness one of these affrays, and, struck with the rapidity and elegance of the

Sounding like one of the tall tales for which American pioneers were famous, this description by a famous naturalist of sights that he had witnessed brings home to us the amazing quantity of wild life which abounded on this continent before its destruction by white men. Pehr Kalm in 1759 described the passenger pigeon and stated that "while these birds are hatching their young, or while the latter are not yet able to fly, the savages or Indians in North America are in the habit of never shooting or killing them, nor of allowing others to do so, pretending that it would be a great pity on their young, which would in that case starve to death." The flocks of pigeons, so numerous under the Indians' conservation, in less than a century after the scenes described below, are as extinct as their distant relative, the proverbial dodo.

motions exhibited, feel desirous of seeing them repeated, his wishes will be gratified if he only remain in the place until the next group comes up.

### A Billion Pigeons

It may not, perhaps, be out of place to attempt an estimate of the number of pigeons contained in one of those mighty flocks, and of the quantity of food daily consumed by its members. The inquiry will tend to show the astonishing bounty of the great Author of Nature in providing for the wants of His creatures. Let us take a column of 1 mile in breadth, which is far below the average size, and suppose it passing over us without interruption for three hours, at the rate mentioned above of 1 mile in the minute. This will give us a parallelogram of 180 miles by 1, covering 180 square miles. Allowing 2 pigeons to the square yard, we have 1,115,136,000 pigeons in one flock. As every pigeon daily consumes fully half a pint of food, the quantity necessary for supplying this vast multitude must be 8,712,000 bushels per day.

As soon as the pigeons discover a sufficiency of food to entice them to alight, they fly round in circles, reviewing the country below. During their evolutions, on such occasions, the dense mass which they form exhibits a beautiful appearance, as it changes its direction, now displaying a glistening sheet of azure, when the backs of the birds come simultaneously into view, and anon, suddenly presenting a mass of rich deep purple. They then pass lower, over the woods, and for a moment are lost among the foliage, but again

emerge, and are seen gliding aloft. They now alight, but the next moment, as if suddenly alarmed, they take to wing, producing by the flapping of their wings a noise like the roar of distant thunder, and sweep through the forests to see if danger is near. Hunger, however, soon brings them to the ground. When alighted, they are seen industriously throwing up the withered leaves in quest of the fallen mast. The rear ranks are continually rising, passing over the main body, and alighting in front, in such rapid succession, that the whole flock seems still on the wing. The quantity of ground thus swept is astonishing, and so completely has it been cleared, that the gleaner who might follow in their rear would find his labor completely lost. Whilst feeding, their avidity is at times so great that in attempting to swallow a large acorn or nut they are seen gasping for a long while, as if in the agonies of suffocation.

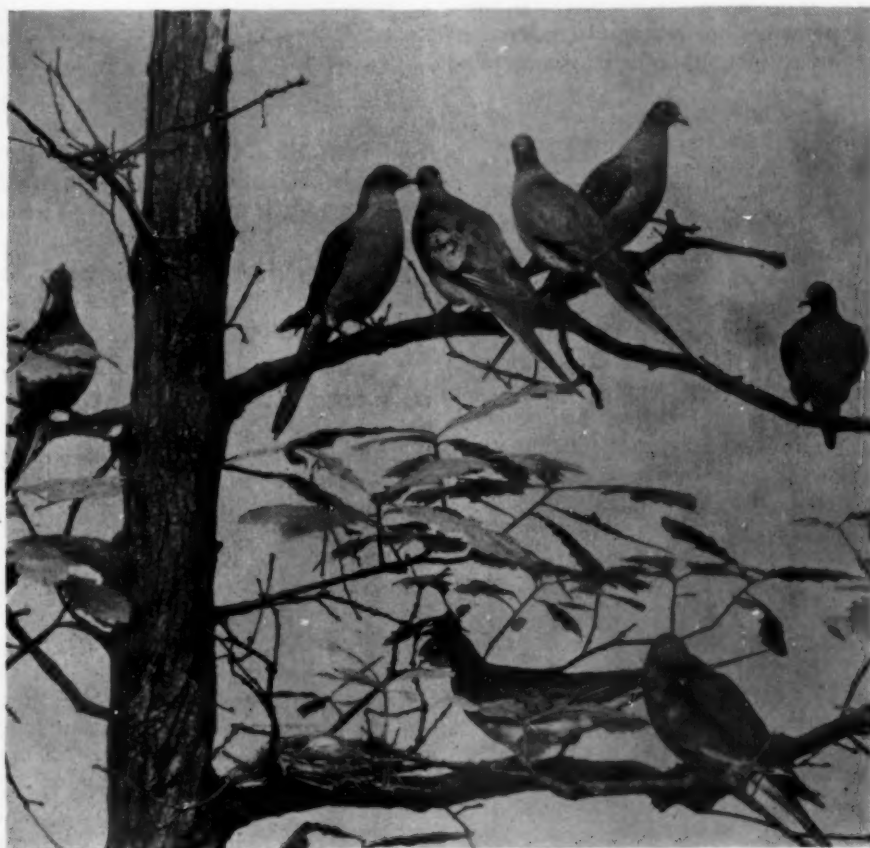
On such occasions, when the woods are filled with these pigeons, they are killed in immense numbers, although no apparent diminution ensues. About the middle of the day, after their repast is finished, they settle on the trees, to enjoy rest, and digest their food. On the ground they walk with

ease, as well as on the branches, frequently jerking their beautiful tail, and moving the neck backward and forward in the most graceful manner. As the sun begins to sink beneath the horizon, they depart en masse for the roosting place, which not unfrequently is hundreds of miles distant, as has been ascertained by persons who have kept an account of their arrivals and departures.

### The Slaughter

Let us now, kind reader, inspect their place of nightly rendezvous. One of these curious roosting places, on the banks of the Green River in Kentucky, I repeatedly visited. It was, as is always the case, in a portion of the forest where the trees were of great magnitude, and where there was little underwood. I rode through it upward of 40 miles, and, crossing it in different parts, found its average breadth to be rather more than 3 miles. My first view of it was about a fortnight subsequent to the period when they had made choice of it, and I arrived there nearly two hours before sunset. Few pigeons were then to be seen, but a great number of persons, with horses and wagons, guns and ammunition, had already established encampments on the borders. Two farmers from the

vicinity of Russellville, distant more than 100 miles, had driven upward of 300 hogs to be fattened on the pigeons which were to be slaughtered. Here and there, the people employed in plucking and salting what had already been procured, were seen sitting in the midst of large piles of these birds. The dung lay several inches deep, covering the whole extent of the roosting place, like a bed of snow. Many trees 2 feet in diameter, I observed, were broken off at no great distance from the ground, and the branches of many of the largest and tallest had given way, as if the forest had been swept by a tornado. Everything proved to me that the number of birds resorting to this part of the forest must be immense beyond conception. As the period of their arrival approached, their foes anxiously prepared to receive them. Some were furnished with iron pots containing sulphur, others with torches of pine knots, many with poles, and the rest with guns. The sun was lost to our view, yet not a pigeon had arrived. Everything was ready, and all eyes were gazing on the clear sky, which appeared in glimpses amidst the tall trees. Suddenly there burst forth a general cry of "Here they come!" The noise which they made, though yet distant, reminded me of a hard gale at sea passing through the rigging of a close-reefed vessel. As the birds arrived, and passed over me, I felt a current of air that surprised me. Thousands were soon knocked down by the pole men. The birds continued to pour in. The fires were lighted, and a magnificent, as well as wonderful and almost terrifying sight presented itself. The pigeons, arriving by thousands, alighted everywhere, one above another, until solid masses as large as hogsheads, were formed on the branches all round. Here and there the perches gave way under the weight with a crash, and falling to the ground, destroyed hundreds of birds beneath, forcing down the dense groups with which every stick was loaded. It was a scene of uproar and confusion. I found it quite useless to speak, or even to shout (Turn to page 93)



A group of passenger pigeons as they appeared in life, shown in the Field Museum of Natural History in Chicago. These now-extinct birds lived in enormous flocks, whose weight sometimes broke the trees in which they roosted.



## Birthplace of the Moon

THE FACT that the north and south magnetic poles of the earth are approximately at the ends of the Pacific Ocean Basin is circumstantial evidence for the old theory that the moon was born from that part of the earth.

According to this idea, at some time in the distant past a huge mass was torn loose from the earth to form the moon, and the hole that it left is now the Pacific Ocean. The magnetic evidence is pointed out by Dr. Oliver J. Lee, of the Dearborn Observatory, Northwestern University.

The geographical north and south poles of the earth are, of course, symmetrically placed, 180 degrees apart, or just half way around from each other. Dr. Lee points out that the case of the magnetic poles is different.

"A remarkable asymmetry exists in the longitude of the earth's magnetic poles, which are at present in 96° west and 155° east longitude," he states. "They are, therefore, only 109° apart, and their longitudes mark out roughly the average boundaries of the Pacific Ocean, the vast basin of which has many 'deeps' and is enclosed by a giant circlet of extinct and active volcanoes.

"If this basin is the birthplace of the moon, it does not seem unreasonable to expect that enough of the heavier, deep-lying magnetic elements in the earth may have been torn along, placenta-wise, on that natal occasion to actually fix the magnetic poles of the earth in these regions. Perhaps it would be better to say that when the lunar material departed, a shift in the distribution of magnetic materials within the remaining mass took place toward the Pacific basin."

### Geology

*Science News-Letter, August 9, 1930*

## New Hormone

A HORMONE is secreted by the middle part of the brain which stimulates the kidneys to increased activity, Dr. J. Olivet of the Augusta Hospital, Berlin, has just reported. The hormone is produced by the middle part of the brain but is ejected when other parts of the brain are irritated.

Some time ago it was observed that irritation of certain spots of the brain, particularly that known as the fourth ventricle, stimulated the kidneys and produced a strong diuretic action. It was believed that

this was purely a nervous action, that when the fourth ventricle was irritated a nerve sent a message to the kidneys which increased their activity.

However, it was found that the same result was produced when the kidneys were entirely freed of their nerves. This led to the theory that the messenger from the brain to the kidneys was a chemical and not a nervous one, at least in this case.

Dr. Olivet found that the blood serum of animals that had had their brain ventricles irritated produced the same effect on the kidneys, when injected into other animals, as did direct irritation of the brain ventricle. This he considered evidence that a hormone was at work. The hormone seems to be present not only in the blood serum but in the urine of the animals.

### Physiology

*Science News-Letter, August 9, 1930*

## Eskimo Chewing

THE OLD adage has been altered to read, "Tell me *how* you eat and I'll tell you what you are"; but Prof. Earnest A. Hooton of Harvard University has doubts of the validity of this particular article of evolutionary doctrine. In the scientific periodical, *Human Biology*, he discusses this and other skepticisms that have grown up in his mind concerning certain special hypotheses in evolution.

It has for a long time been stoutly maintained by some anthropologists that the peculiar shape of Eskimo skulls was impressed on them by the hard exercise of the jaw muscles of this people, necessitated by their exclusive diet of meat and fish, and to the fact that they prepare leather by chewing animal skins soft. But Prof. Hooton calls attention to the counter-vailing facts that much of the fish that Eskimos eat has been frozen hard and then thawed again, reducing it to "about the consistency of ice cream," and that the chewing of hides is exclusively women's work, whereas the peculiar skull shape in Eskimos is most strongly evident on the male side of the igloo.

Among the other beliefs at which Prof. Hooton looks quizzically is the doctrine that Negroes, Malays and other dark peoples have deeply pigmented skins as a result of the constant tanning they get from the tropical sun.

### Anthropology

*Science News-Letter, August 9, 1930*

# IN VARIOUS

## Spleen X-Rayed

AN X-ray picture of the spleen, one of the body's most important organs, may now be made, Drs. W. S. Keith and D. R. Briggs of the University of Chicago have just reported. This means that when physicians suspect an illness is due to disease of the spleen, they may examine the organ by X-ray without making an exploratory operation into the abdomen.

The spleen is a unique organ. It has the most abundant blood supply of any organ of the animal body. Moreover, its tiny blood vessels are richly supplied with scavenger cells. These cells mechanically filter out bacteria and other undesirable particles from the blood stream.

Taking advantage of this unusually efficient local scavenger function, Drs. Keith and Briggs injected emulsions of iodized or X-ray-opaque nutrient oils into the blood stream. Within half an hour most of the oil droplets had been taken up by the scavenger apparatus of the spleen. X-ray pictures now showed sharply defined splenic shadows, even more dense than the shadows cast by the adjacent bones.

The injected emulsion is practically non-toxic, and disappears from the body within a few days. It is presumably digested and used as food by internal tissues.

### Physiology

*Science News-Letter, August 9, 1930*

## Third Baby Orang

A BABY orang-utan, the third born in captivity, arrived recently at the Philadelphia Zoological Gardens. The first infant orang was born in the Zoo in Nuremberg, Germany, and lived about a week. The second was born of the present mother in the Philadelphia Zoo and lived about a year. This baby was five pounds in weight at birth and is thriving.

There has been a theory that the orangs seek seclusion for the birth of their young, but this mother made her nest right up against the bars of her cage in full sight of the crowds.

### Zoology

*Science News-Letter, August 9, 1930*



# SCIENCE FIELDS

## Musk-Oxen For Alaska

**I**N an effort to replace the lost musk-ox herds of northern Alaska, the U. S. Department of Agriculture has arranged to import thirty of these odd but valuable animals from Greenland.

They will make a long detour on their way, for they are to be brought first to New York, thence by rail to Seattle, and finally by steamer and rail again to Fairbanks, Alaska. Representatives of the Bureau of Biological Survey, skilled in the handling of wild animals in transit, will accompany them all the way.

The little herd will be an expensive one, for an appropriation of \$40,000 has been set aside to cover the cost of its acquisition, transportation and establishment in the protected enclosure that will be its new home. But it is expected that the animals may eventually pay for themselves many times over, as the imported reindeer have done, by becoming the basis of a new meat-producing industry utilizing food plants that now go to waste. Alaska once had a fair number of musk-oxen in the northern part of the territory, but indiscriminate hunting by explorers, hunters and natives with newly-acquired firearms exterminated the herds.

The musk-ox is not an ox, in spite of its name. It looks a little like a long-haired but diminutive brand of cattle, but zoologically stands in a "missing-link" position between cattle and sheep. Its Latin name, *Ovibos*, is a recognition of that fact, for it translates literally into "sheep-cow."

Zoology

Science News-Letter, August 9, 1930

## Tropical Opossums

**A**TINY opossum no bigger than a mouse, with nine little ones clinging to her fur, was found hiding in a bunch of bananas by a grocer of Waco, Texas, and turned them over to the zoology department of Baylor University there. Dr. G. E. Potter, head of the department, reports the find in *Science*.

These tiny tropical opossums have been reported as banana-bunch immigrants a few times before, but this specimen seems to set a record for the size of the family travelling.

Dr. Potter states that the mother was seen several times to run her sharp snout under one of her offspring on the floor and toss it into the air and on to her back, where it dug its little paws into her fur and wrapped its tail around hers, after the manner of the young of our larger native opossums.

It is hoped that whoever finds a tiny opossum-like animal hiding in the fruit section of a grocery or delicatessen will take the trouble to capture it and send it as quickly as possible to the nearest college biology department or zoological park. If the animal is dead when found or dies afterward, it should be preserved in alcohol or a solution of formalin.

Zoology

Science News-Letter, August 9, 1930

## Prehistoric Apartment

**H**OW the Indians of the Mimbres Valley lived and farmed two or three thousand years ago is shown by discoveries made in a great 125-room pueblo or prehistoric apartment house by Paul H. Nesbitt, leader of the Logan Museum-Southwestern Expedition, sponsored by Beloit College, Beloit, Wis. The ruins of the cultural area being explored by Mr. Nesbitt and his students date, according to archaeologists, between 1000 B. C. and 200 B. C.

In a statement to Science Service, Mr. Nesbitt said:

"One cache of 25 stone hoes was found on a stone ledge a few inches above the floor of a room and another lot of 48 stone hoes was found in association with a male skeleton. Such hoes are rare and the number above represents a greater total than has ever been found in any single ruin in the southwest.

"With another burial was found a copper bell, a product not manufactured here but brought by trade from old Mexico. Only one other such bell has been found in this area. W. Bradfield, state archaeologist of Santa Fé, in 1924 found one at Cameron Creek ruin near Hurley, N. M. The bell is of great importance as it throws additional light on the age of these ruins.

"I have been able to establish three house types based on pottery and house construction. The early inhabitants lived in pit rooms (entirely subterranean); later the houses became semi-subterranean and finally were built entirely above ground."

Archaeology

Science News-Letter, August 9, 1930

## New Weather Bureau

**T**HE Union of Socialist Soviet Republics is organizing the study of the manifold geographical, hydrological, and meteorological features of its vast territory under the direction of a newly formed hydro-meteorological department.

The new department will have functions similar to those of the U. S. Weather Bureau in the gathering and disseminating of weather information, and the making of meteorological and hydrological reports and forecasts for the aid of aviators, farmers, navigators, and others who depend on accurate predictions of weather. It will also study terrestrial magnetism.

A district system, with local stations and observatories, is being organized to work on the varied local conditions and problems, for the area of Russia is so great as to include semi-tropical climate as well as polar ice and snow fields. Each of the republics has its own hydro-meteorological committee, and they all report to the main U. S. S. R. Hydro-Meteorological Committee, of which Professor Vangenheim is the new president.

Meteorology

Science News-Letter, August 9, 1930

## Weak Solutions

**A**NEW riddle for scientists to solve may have been created by recent observations of Prof. Carl Oppenheimer of Berlin and Herman Junker of Hamburg.

These men have been working with extremely weak solutions of metal salts, of hormones and some of the vitamins. The solutions are so weak that they cannot contain any molecules, as their concentration is one part in ten sextillions.

Still these extremely weak solutions, which contain an unimaginably tiny amount of a metal salt or a physiological substance, are able to affect the rate of growth of tiny living organisms, the protozoa.

Biochemistry

Science News-Letter, August 9, 1930

## Chemistry in India

**T**HE progress of India in the field of chemistry is reflected in the recent announcement that the Indian Chemical Society's official journal is now being published monthly instead of quarterly as formerly.

Chemistry

Science News-Letter, August 9, 1930

# Imitator of Moon Is Brilliant In August Sky

*Astronomy*

By James Stokley

THE planets Venus and Saturn, two of the most interesting members of the solar system, and the Perseid meteor shower form the chief astronomical attractions for the month of August. For a few days at the end of the month Mercury, closest of all the planets to the sun, will be seen, but with difficulty.

During the last few months Venus has been conspicuous in the western evening sky, ever increasing in brilliance. During August its brightness will continue to increase, even though it is now brighter than any of the permanent celestial objects except the sun and moon. At the end of the month it will be nearly a hundred times as bright as a first magnitude star, such as Altair, in Aquila, the eagle, which shines high in the southern sky.

Through a telescope Venus now appears of the shape of the moon just after first quarter, that is, gibbous. But very little else of interest can be seen on the planet, even with the best of telescopes.

## Galileo Discovered Imitation

It was in 1610 that the Italian astronomer Galileo, first to use a telescope, saw Venus other than with the unaided eye. His discovery that "the mother of loves (Venus) imitates the phases of Cynthia (the moon)," as he expressed it, was one of the most important of the many that were made by this great pioneer observer. This discovery played an important part in establishing the then novel theory of Copernicus, that the earth, along with the other planets, revolved around the sun.

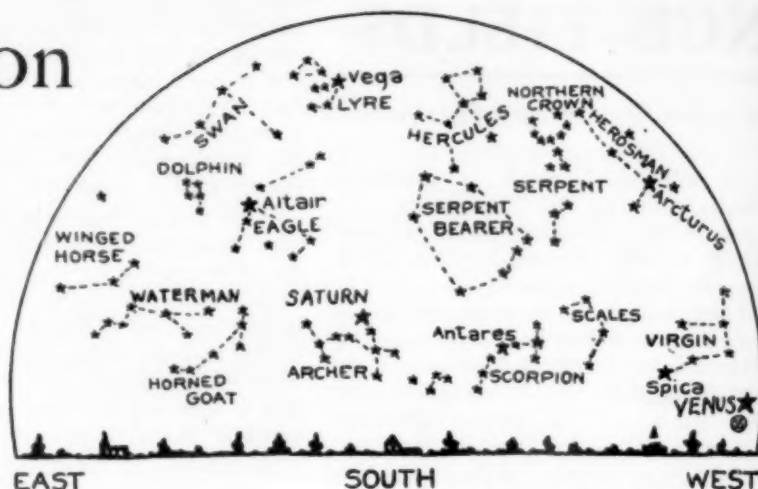
Nicolas Copernicus was a Polish astronomer whose main job was an ecclesiastical one. Though he never actually took holy orders, becoming a priest, he was canon of the Cathed-

ral at Frauenburg. The first publication of his theory was in a little book by his disciple, Georg Joachim Rheticus. This was the "Narratio Prima," published first at Danzig in 1540 and reissued the following year at Basle. Copernicus' own work, "De Revolutionibus Orbium Coelestium" ("On the Revolutions of the Celestial Orbs") was published at Nuremberg in 1543. But he never lived to see the effect it would have on the world. The first copy was put in his hands as he lay in his death bed.

All these books are now excessively rare and fortunate is the library that possesses a copy of any of them. Even the second edition of "De Revolutionibus," at Basle in 1566, is almost as rare as the first, while also of great rarity is the third, published at Amsterdam in 1617. Strangely enough no English translation has ever been published, though this will probably be rectified in the near future after the lapse of nearly four centuries. The History of Science Society has in its custody a translation made by an Englishman and expects to publish it shortly.

## Venus and Her Phases

Copernicus' ideas were opposed by the church, which objected to the earth and man being dethroned from the center of the universe. His theory was not really new, as it had been proposed by the Greek astronomer Aristarchus of Samos many centuries earlier. But the accepted theory during and after Copernicus' lifetime was that associated with the name of Ptolemy. According to it, the earth was at the center, and the sun, moon and the five known planets revolved around it.



Hanging low in the west, Venus, who imitates the phases of Cynthia, will soon invite observation by becoming 100 times brighter than a first magnitude star.

Venus, by the Ptolemaic theory, revolved in an orbit within that of the sun. As it was never seen far from the sun, this meant that if it were round, and illuminated by the sun, the latter, always being back of it, would never shine on all of its surface that we see. In other words, if it showed any phases, it would always be a crescent. It could never, according to the Ptolemaic theory, get beyond the sun and show a gibbous or full phase.

Shortly after he began using his telescope in 1610 Galileo found that Venus showed all the phases observed in the moon, from the crescent to full and back to crescent again. This showed that Venus revolved around the sun and not around the earth, and was a serious blow to the generally accepted ideas of his time. But he had to be cautious about announcing it. It was such a radical discovery that he first announced it to his friend, Johann Kepler, in the following anagram:

## His Cautious Announcement

"Haec immatura, a me, jam frustra, leguntur. —oy."

This is necessarily rather garbled Latin, but can be translated as "These things not ripe at present in vain are read by me." This does not mean very much, but the letters can be transposed to read:

"Cynthiae figuras aemulatur Mater Amorum."

Translated, this is the phrase



quoted above, "The mother of loves imitates the phases of Cynthia."

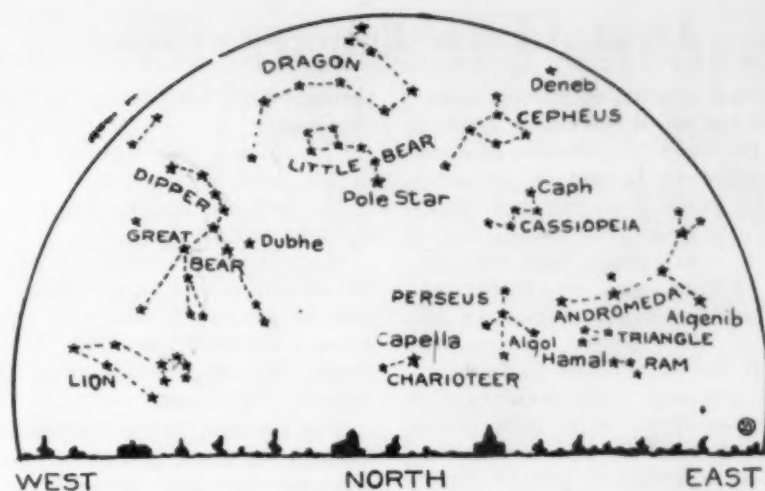
Even this discovery did not lead to the immediate acceptance of the views of Copernicus, so firmly were the older ideas entrenched. In fact, Galileo himself was later forced by the Inquisition to recant, and to say that he did not believe that the earth moved. But his ideas remained, and finally led to a true knowledge of how the solar system is put together.

### Saturn Also Visible to Eye

Saturn, the other naked eye planet in the August evening skies, is to be seen in the south. At sunset in the middle of the month it is about 20 to 25 degrees above the southern horizon, in the constellation of Sagittarius, the archer. Its steady yellowish light, brighter than any of the surrounding stars, makes it easy to locate. Mercury, the innermost of the planets, reaches its greatest distance to the east of the sun on the twenty-sixth, and then it sets about an hour after the sun. To the keen eye about this time it may be perceived low in the gathering evening dusk, but it will be rather hard to locate.

The Perseid meteors this month are at their height on the nights of August 10 and 11. They were described in detail in the last issue of the *SCIENCE NEWS-LETTER* by Dr. Charles P. Olivier.

Five first magnitude stars are visible these August evenings. Almost directly overhead is Vega, in Lyra, the lyre. A short distance to



How the observer will find the Northern sky in August. Observation will be better during the latter part of the month after the moon begins to wane.

the east, at the head of the familiar Northern Cross, or Cygnus, the swan, is Deneb. To the south is Altair, in Aquila, the eagle. Low in the southwest is Scorpio, the scorpion, with the ruddy Antares. Capella, in Bootes, is almost directly west.

Appropriately enough, the moon is in first quarter on the first and full on the tenth. Therefore, bright moonlight evenings will be the rule during the first half of August. On the seventeenth it is in last quarter, and is new on the twenty-third, so that it has time to come again to first quarter on the thirtieth.

*Science News-Letter, August 9, 1930*

## More Prison Outbreaks Predicted

*Penology*

**F**URTHER prison outbreaks like the one which occurred recently in the Ohio Penitentiary, Columbus, where 322 prisoners were burned to death, and those at New York State Prison, Auburn, are predicted by Winthrop D. Lane, secretary of the advisory committee on penal institutions, probation and parole of the National Commission on Law Observation and Enforcement, in a statement published in the current issue of the *Survey Graphic*.

Mr. Lane predicts that the next outbreak will occur in one of the following institutions: New York State Prison, Auburn; Ohio Penitentiary, Columbus; State Prison, Folsom, California; State Reformatory,

Mansfield, Ohio; State Penitentiary, Lansing, Kansas; West Virginia Penitentiary, Moundsville; Missouri Penitentiary, Jefferson City; New York State Prison, Dannemora; Washington State Penitentiary, Walla Walla; State House of Correction and Branch Prison, Marquette, Mich.; Maryland Penitentiary, Baltimore; and the two United States civil penitentiaries at Atlanta and Leavenworth.

"Not only do conditions tending to provoke outbreaks still exist," said Mr. Lane, "but some of these conditions are worse than they were when the outbreaks of the past year occurred."

The causes of prison riots, as ana-

lyzed by Mr. Lane are: Long sentences, especially those imposed by recent legislation; elimination, or reduction, of "good conduct" time; fewer paroles; extraordinary and growing overcrowding; and idleness.

*Science News-Letter, August 9, 1930*

### Artificial Encouragement

**I**MITATION sunlight, shining through fake windows, aids and encourages belated clerks to turn out better work than they are able to do under the artificial stare of ordinary vacuum or gas-filled lamps, experiments conducted recently by the National Physical Laboratory in London indicate.

Eyes are older than electric lights and hence are more at home under conditions approximating natural daylight than with light supplied from globes, was the theory argued by advocates of the new system. It was first tested in the laboratory and then tried in offices.

A comparison of the hourly work output of clerks working in simulated daylight with their efficiency under ordinary artificial lighting conditions showed a balance in favor of imitation daylight. Coloring of the light to approximate the sun's rays was found to be the most essential condition for efficiency, though the distribution of the light through a window-like aperture was also discovered preferable to illumination from semi-indirect bowls suspended from the ceiling.

*Physics*

*Science News-Letter, August 9, 1930*

If it were not for the earth's atmosphere, with its clouds and water vapor, the sun would raise the temperature at the earth's surface about 50 degrees higher than it is.

## Diesel Airplane Engine—Continued

no electrical ignition equipment is used in the operation of the engine removes one of the most troublesome obstacles to extensive radio use in airplanes. With the gasoline engine it is necessary to adopt shielding means for all magnetos, spark-plugs, high and low-tension wiring, and so forth; and these shielding means reduce the efficiency of the ignition system and render it far more liable to failure.

"The Packard experimental cabin plane is equipped with radio transmitter and receiver, and in this way it has been definitely proved during extensive flight-testing that, in regard to both transmission and reception, there is complete absence of any interference."

Chief among the contributions this engine has made to aviation are the following, as stated by Capt. Woolson:

"It will reduce the cost of flying, through greater economy of operation and lessened cost of fuel oil.

"It will carry greater 'pay loads' or travel farther than a gasoline engined plane with an equal amount of fuel.

"Continuous ignition is assured

through high compression inherent in the design.

"It will not stop through too 'lean' or too 'rich' a 'mixture.'

"It will fly upside down as well as right side up."

His Diesel aircraft engine was introduced to the engineering public and its secrets revealed only this year about a month before Capt. Woolson's death. It was the sensation of the Detroit Air Show.

Not for long is the Packard Diesel likely to be alone in the air. In other countries, Germany, France and England, research is in progress upon other heavy oil engines for aircraft use. The Junkers engineers in Germany are experimenting. The British R-101 is driven by heavy oil engines of the Beardmore type but the fact that these weigh about eight pounds per horsepower does not put them in the class with the lighter Packard.

At the Langley Memorial Aeronautical Laboratory of the National Advisory Committee for Aeronautics at Langley Field, Va., much fundamental work is in progress on the

essential facts of Diesel operations.

By using some of the tricks of the Diesel in spark ignited engines it is possible to run modified gasoline engines on fuel oil. A Pratt and Whitney engine has been changed by its makers so that instead of the usual carburetor and intake systems there are fuel injection pumps capable of delivering the gasoline or oil mechanically into the cylinder. There it is fired, not by the heat of the compression as is the case of the Diesel cycle, but by the usual spark ignition. This type of engine has the advantage of burning furnace oil which is cheap, but its efficiency is not so high as one that operates on a true Diesel cycle.

### Diesel's Disappearance

There is a strange similarity in the deaths of Diesel, heavy oil engine pioneer, and Woolson, pioneer of the aircraft Diesel. Both died just at the time that their engines were about to receive the acclaim of the world. Both had received the plaudits of engineers but neither lived to see his mechanical creations spread widely over the face of our mechanical civilization.

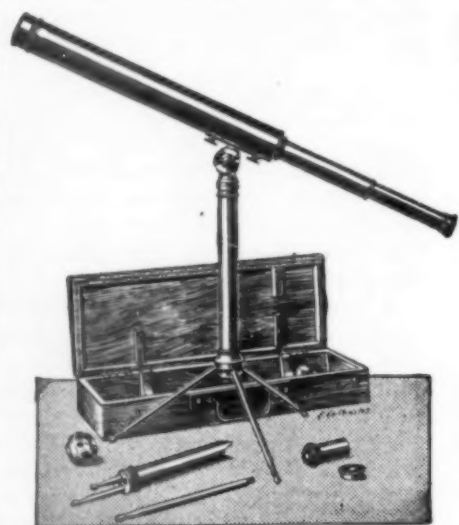
There is mystery in the death of Rudolf Diesel which probably never will be solved. On the night of September 29, 1913, he took passage from Antwerp on a channel steamer which arrived at Harwich, England, the next morning with the famous inventor missing. So much the world knows. Everything else is speculation. Did he fall overboard accidentally? Did he commit suicide? There seems to be no reason for such an act.

At that time the World War was brewing and it has been suggested that German or British agents pushed him overboard or kidnapped him. Some even held that he was alive after the time of his reported death and that he was in the service of the British government during the war.

Whatever Diesel's fate, his principle of engine operation promises to bring more economical and safer power to the air as it has to the sea and land. And with this conquest of the air by the Diesel, the name of Woolson will be firmly linked.

*Science News-Letter, August 9, 1930*

Some fairly pure glass sand deposits are known along the Pacific coast, but because of the large amount of iron in the sand it is used only for brown and amber glass.



No. 5864-5868

Our telescope catalog describes many other types of telescopes up to 4 1/2". Write for Catalog N-L.

Catalog No.	5864	5866	5868
Diameter of object lens	1 1/2"	2"	2 1/4"
Length closed	15 1/2"	24"	30"
Length extended	29 1/4"	34"	42"
Magnification astronomical	30X	60X	90X
Magnification terrestrial	25X	35X	45X
Price	\$35.00	\$45.00	\$70.00

## PALO COMPANY

BIRD GLASSES  
153 WEST 23rd STREET

MICROSCOPES

PRISM BINOCULARS

MAGNIFIERS

NEW YORK, N. Y.



# R-100 Tests New Structural Features

Aeronautics

## Hundreds of People Have Safely Crossed Ocean in Airships

THE safe arrival at Montreal, Canada, of the British airship R-100 after a non-stop flight of 3,400 miles from Cardington, England, shows again that the day of regular trans-Atlantic travel by airship is not far distant.

Since the R-100, one of the two largest airships in the world, is an experimental ship and in many respects is unlike any that has ever been built, the success of this trip helps to establish the present superiority of the airship over the airplane for trans-Atlantic travel. However, the only airplane that can carry nearly as many passengers as an airship, the giant German Dornier DO-X, is yet to make a flight from Europe to America. Her performance will be watched with even more interest than that which now attends the R-100.

### 475 Crossed by Airship

Safety proclaims the airship as the logical means of crossing the Atlantic by air. With the arrival of the R-100 bearing 44 persons, about 475 people have crossed the North Atlantic non-stop by air, it is reported. Of this number statistics show that approximately 442, or 93 per cent., have made the passage by airship and only about 33, or seven per cent., have crossed by airplane.

There have been nine attempts to fly the North Atlantic by rigid airships and all have been successful; no lives have been lost. Thirty-seven attempts have been made to fly by airplane and only 13 of these have been successful. The great loss of life resulting from the airplane attempts is well known.

### No Pay Load in Planes

None of the airplanes carried a pay load, while the Graf Zeppelin on each of its five trips took 20 passengers and several tons of mail and express. Seven persons on the R-100 are observers. Two other crossings were made by the British R-34 and one by the U. S. S. Los Angeles.

The chief innovation in the design of the R-100 is its "fatness." The Graf is a slender cigar while the R-100 curves throughout its entire length in graceful lines. It is about 70 feet shorter than the German ship and a

third larger in diameter. This feature is said to give it great strength to resist shearing stress similar to that which caused the Shenandoah disaster in the United States.

### Only 42 Parts

Although more than five years elapsed from the awarding of contract in 1924 to the delivery of the ship, new methods developed during that time should greatly speed up the production and reduce the cost of similar airships to be built in the future. For example, every girder was made up from only seven different parts and there were only 42 different kinds of parts in the whole framework. Thus the pieces were ordered in lots of half-millions and the building of an airship was made a mass-production job.

The beams and girders of the R-100 were not made from aluminum alloy rolled into shape like iron and steel, as has been the case in the past. Instead, thin strips of the light metal

were coiled into spiral tubes and riveted along the overlap. Structural pieces built in this fashion are claimed to be more uniform in size and strength than others, and more easily tested and inspected.

*Science News-Letter, August 9, 1930*

## Find No Fruit Fly

ENTOMOLOGICAL inspectors in the fruit-fly area in Florida did not find any of the troublesome pests during the month of July, it has been learned from the U. S. Department of Agriculture officials.

This does not mean, however, that the infestation has been completely stamped out, for a small focus may still exist somewhere in the state, capable of starting the mischief all over again if vigilance is relaxed. For this reason growers are zealously spraying with poison bait sprays even where the fly has not been seen for months.

*Entomology*

*Science News-Letter, August 9, 1930*

## The Passenger Pigeon—Continued

to those persons who were nearest to me. Even the reports of the guns were seldom heard, and I was made aware of the firing only by seeing the shooters reloading.

No one dared venture within the line of devastation. The hogs had been penned up in due time, the picking up of the dead and wounded being left for the next morning's employment. The pigeons were constantly coming, and it was past midnight before I perceived a decrease in the number of those that arrived. The uproar continued the whole night, and as I was anxious to know to what distance the sound reached, I sent off a man accustomed to perambulate the forest, who, returning two hours afterwards, informed me he had heard it distinctly when 3 miles from the spot. Toward the approach of day, the noise in some measure subsided; long before objects were distinguishable, the pigeons began to move off in a direction quite different from that in which they had arrived the evening before, and at

sunrise all that were able to fly had disappeared. The howling of the wolves now reached our ears, and the foxes, lynxes, cougars, bears, raccoons, opossums and polecats were seen sneaking off, whilst eagles and hawks of different species, accompanied by a crowd of vultures, came to supplant them, and enjoy their share of the spoil.

It was then that the authors of all this devastation began their entry amongst the dead, the dying, and the mangled. The pigeons were picked up and piled in heaps, until each had as many as he could possibly dispose of, when the hogs were let loose to feed on the remainder.

Persons unacquainted with these birds might naturally conclude that such dreadful havoc would soon put an end to the species. But I have satisfied myself, by long observation, that nothing but the gradual diminution of our forests can accomplish their decrease, as they not unfrequently quadruple their numbers yearly, and always at least double it.

*Science News-Letter, August 9, 1930*



## Precision combined with Sturdiness

Bausch & Lomb has drawn upon its long experience in the manufacture of fine precision instruments to produce Microscope FS, an instrument especially for students in high school and college.

Its ease of manipulation and sturdy well-built construction make it particularly adapted to use in the laboratories of secondary schools. But, since it is equipped with a fine adjustment and standard objectives and eyepieces, it amply meets the requirements of more advanced students.

A revolving nosepiece allows instant interchange of magnification without refocusing. All metal parts are chromium plated to insure that they will not rust, corrode or become stained by reagents. The rest of the Microscope is satiny black, giving a handsome and durable finish.

Write for complete information on this FS Microscope.

**BAUSCH & LOMB OPTICAL CO.,**  
644 St. Paul St., Rochester, N. Y.  
*Makers of Orthogon Eyeglass Lenses for Better Vision*



# BAUSCH & LOMB

## NATURE RAMBLINGS

By Frank Thone



*An Overrated Insect*

OF all the parasitic and predatory insects that pester us, mankind is least likely to resent the flea. For one thing, the flea's presence is less of a social reproach because the flea is likely to come regardless of cleanliness, whereas most other creatures of his kind are distinctly the offspring of dirt. But the flea bites the daintiest and most recently bathed ankle as readily as he does the roughest unwashed neck. Then also, his antic agility is more or less amusing, so that we are prone to treat him as a joke. A joke we'd rather not have on us, to be sure, but still a joke.

Nevertheless, we are prone also to take the flea too seriously. He has become one of the favorites of facile near-naturalists, who try to humiliate us by telling us that if a man could jump in proportion to the performance of the flea, he could lightly leap over the Washington Monument, or skip the Mississippi River, or do some similar marvelous feat.

As a matter of fact, if you could get a man as small as a flea he would probably be able to jump as high as a flea can jump. And if you could get a flea as large as a man, he probably couldn't jump at all. For the flea's muscles are all inside his horny armor or external skeleton, and if he were greatly increased in size the weight of this shell would increase more rapidly than his strength. By the time human size was reached, the imaginary giant flea would be as thoroughly cumbered as a fourteenth-century knight in plate armor, who had to have a couple of squires to help him mount his horse, and who was as helpless as a turtle on its back if an enemy hit him right with a lance and pushed him off.

*Science News-Letter, August 9, 1930*



## FIRST GLANCES AT NEW BOOKS

**THE DANUBE IN PREHISTORY**—V. Gordon Childe—*Oxford Univ. Press*, 479 p., \$15. When the Turkish tide flowed westward until it was checked at the gates of Vienna, history was only repeating prehistory. The valley of the Danube has always been a broad highway for peoples pressing out of the East and seeking empire in the West. We are becoming a little more expert than we once were in deciphering the unlettered records written in celt and potsherd, in broken spear and fibula. Prof. Childe has found such documents in the fields of Hungary, in the valleys of Switzerland, and in all the places where the many waters of the great river start. He has read them with the skill of a scholar and here sets down his findings with the confident style of a man of letters.

*Archaeology*

*Science News-Letter*, August 9, 1930

**THE NEW DAY ARITHMETICS**—Fletcher Durell, Harry O. Gillet and Thomas J. Durell—*Chas. E. Merrill Co.* Elementary Book, 450 p., 80c. Intermediate Book, 452 p., 84c. Here are two arithmetic texts that go a long way towards making the subjects easy for the teacher and attractive to the students. The problems are eminently practical and are graded into three levels, for meeting the needs of ways difficult for the first few weeks. Why he should study geometry is well explained.

*Mathematics*

*Science News-Letter*, August 9, 1930

**HEBREWISMS OF WEST AFRICA**—Joseph J. Williams—*Lincoln MacVeagh*, 443 p., \$7.50. The theory that "somewhere in the dim past a wave or waves of Hebraic influence swept over Negro Africa" leaving traces that endure even to the present is advanced by the author and backed by many points in Jewish history and religion and in the culture of the African Ashanti. To account for "Hebraisms, real or apparent" being found among the Africans, Dr. Williams suggests that groups of Jews of pre-exilic times probably were carried by their commercial interests deeper and deeper into the interior of Africa. The theory, he admits, must at present remain a theory.

*Ethnology*

*Science News-Letter*, August 9, 1930

**HEAT POWER**—E. B. Norris and Eric Therkelsen—*McGraw-Hill*, 376 p., \$3.50. By feeding the theory of the internal combustion engine to the American boy's natural interest in the operation of his automobile, thermodynamics is introduced. This is a text written with appreciation for the changes in power production that have taken place and are still going on in the United States.

*Physics*

*Science News-Letter*, August 9, 1930

**MENTAL HYGIENE**—Ernest R. Groves and Phyllis Blanchard—*Holt*, 467 p., \$4. This comprehensive text book for college use is at the same time a readable introduction to a subject of growing importance. Books on mental hygiene are escaping from an early tendency to deal in essay style with the "larger aspects" of the matter. This volume abounds in facts and stresses its points with a few impressive figures. It treats of the mental hygiene problems of childhood, college life, marriage, business, religion, and other phases of life. There is an unexpected chapter on the mental hygiene aspects of literature which is one of the most interesting in the book.

*Mental Hygiene*

*Science News-Letter*, August 9, 1930

**MANUAL OF BIOLOGY**—George A. Baitsell—*Macmillan*, 369 p., \$2.60. The success of this text book for general college courses is sufficiently attested by the fact that it now enters its tenth printing and its fourth edition.

*Biology*

*Science News-Letter*, August 9, 1930

**PROCEEDINGS OF THE SEVENTEENTH INTERNATIONAL CONGRESS OF ORIENTALISTS**, OXFORD, 1928—*Oxford Univ. Press*, 117 p., 7 s., 6 d. The record of formal proceedings of the Seventeenth Congress, including brief abstracts of a number of the papers.

*General Science*

*Science News-Letter*, August 9, 1930

**ASTEROIDEA OF THE NORTH PACIFIC AND ADJACENT WATERS: PART 3. FORCIPULATA (CONCLUDED)**—W. K. Fisher—356 p., 93 pl. \$1.40. A monograph of interest to students of the echinoderms.

*Zoology*

*Science News-Letter*, August 9, 1930

**ROCK GARDEN AND ALPINE PLANTS**—Henry Correvon—*Macmillan*, 544 p., \$6. Probably no botanist or horticulturist would dispute the statement that M. Correvon knows more about Alpine gardens and the plants that make them up than anybody else in the world. This scholarly and genial Swiss has written extensively on his specialty and other botanical subjects, but mainly in French, so that it is with joyous anticipations of an extension of his Continental triumphs that his friends now see this pretentious work produced in English, under the editorship of Leonard Barron. After a general discussion of the principles underlying the development of rock gardens and some practical directions for their construction, the author launches into a discussion of all available plants, listing them alphabetically and giving with each a brief summary of its qualities and limitations. A special feature of the book is the large numbers of unusually fine colored illustrations, which the artist has signed only with a self-effacing initial "R." These are both good botany and excellent design.

*Horticulture*

*Science News-Letter*, August 9, 1930

**PORTO RICO AND ITS PROBLEMS**—Victor S. Clark and associates—*Brookings Institution*, 707 p., \$5. Uncle Sam's West Indian island possession is given close and expert scrutiny in this important study by the Brookings Institution. Various specialists have cooperated with Dr. Clark in the preparation of the volume. In addition to a consideration of various phases of Porto Rican life and government, the investigation presents concrete recommendations calling for action by Congress with the purpose of remedying some of the Island's present difficulties.

*Economics—Geography*

*Science News-Letter*, August 9, 1930

**GEOLOGY AND WATER RESOURCES OF THE KAU DISTRICT, HAWAII**—Harold T. Stearns, William O. Clark, and Oscar E. Meinzer—*Govt. Printing Office*, 194 p., 31 pl., 3 maps, 85c. This complete study of a limited area in Hawaii will be of use to teaching geologists as well as to those directly interested in local problems.

*Geology*

*Science News-Letter*, August 9, 1930

## First Glances at New Books—Continued

**BRINGING UP YOUR CHILD**—Edwina Abbott Cowan and Avis D. Carlson—*Duffield*, 278 p., \$2.50. Written in language that any parent can easily understand and dealing with the ordinary situations of child life, this book will probably appeal to a good many young mothers and fathers who would like to put into practice some of the new-found psychological knowledge, but do not quite know how to start.

*Psychology*

*Science News-Letter*, August 9, 1930

**THE ADJUSTMENT OF ERRORS IN PRACTICAL SCIENCE**—R. W. M. Gibbs—*Oxford*, 112 p., \$1.75. "No measurement of any real thing can ever be correct," says the author in his introduction, "for the simple reason that no instrument is capable of infinitely small displacements and no human eye can detect infinitesimal separations. Errors are therefore inevitable." In this useful little book he discusses errors and their adjustment under such headings as "Probability, Chance and Odds," "The Correlation Coefficient," "Weighted Observations," "Error of the Last Figure," etc. Any one who uses figures in scientific work will find it of value and help them properly to interpret their data.

*Mathematics*

*Science News-Letter*, August 9, 1930

**THE CHARM OF TREES**—T. F. Davies—*Revell*, 125 p., \$1.50. A book of discursive essays, using trees and their lore as points of departure, rather than treatises about the trees themselves.

*Essays*

*Science News-Letter*, August 9, 1930

**FOUNDATIONS OF BIOLOGY**—Lorande Loss Woodruff—*Macmillan*, 501 p., \$3.50. This successful and very widely used text in general biology now enters its fourth edition.

*Biology*

*Science News-Letter*, August 9, 1930

**A SURVEY OF THE LAW CONCERNING DEAD HUMAN BODIES**—George H. Weinmann—*National Research Council*, 199 p., \$2. Particularly interesting to superintendents of hospitals, directors of medical schools, and coroners and assistants is this clearly written report issued under the auspices of the committee on medicolegal problems of the National Research Council.

*Medicine—Law*

*Science News-Letter*, August 9, 1930

**OUR FOREFATHERS, THE GOTHIC NATIONS**—Gudmund Schütte—Translated by Jean Young—*Cambridge Univ. Press*, 288 p., \$6.50. This ethnography of the forefathers of England and Scandinavia appeared in Danish in 1926. This translation is of special interest to American and English science because it fills a gap in the library of the ethnologist. The remarkable feature of the book, however, is its pioneer effort at a strict regularity of plan. Even in encyclopedias, where standardization is the rule, Dr. Schütte points out that standardization fails when the contributors come to write on ethnography. Topics discussed by different contributors are handled so differently that any attempt at comparative study reveals a chaotic condition. The Danish author has also attempted a systematic reform in nomenclature.

*Ethnology*

*Science News-Letter*, August 9, 1930

**SCIENCE IN THE KITCHEN: THE SELECTION, CARE, AND SERVICE OF FOODS**—By eight authors—*Univ. of Pittsburgh*, 82 p., 60 cents. Eight more of the popular radio talks on current science, sponsored by the University of Pittsburgh. Topics include the well-planned kitchen, food for young children, good proportions of foods, good meals for the young homemaker.

*Home Economics*

*Science News-Letter*, August 9, 1930

**LIGHT**—C. G. Vernon—*Cambridge University Press*, 191 p., \$1.40. This introductory textbook of one field in physics was prepared by the head of the science department of an English school to allow the teaching of the fundamentals of light without exclusive recourse to mathematics.

*Physics*

*Science News-Letter*, August 9, 1930

**AIR CONQUEST**—W. Jefferson Davis—*Parker, Stone and Baird*, 233 p., \$3. An interesting account of various phases of flying in its transportation, trade and military uses.

*Aviation*

*Science News-Letter*, August 9, 1930

**FIELD TESTS FOR THE COMMON METALS**—George R. Fansett—*University of Arizona*, 51 p., Free. For those who expect to hunt for valuable minerals the simple and elementary directions given in this pamphlet will be useful.

*Mineralogy*

*Science News-Letter*, August 9, 1930

**MICROBIOLOGY**—Benjamin Franklin Lutman—*McGraw-Hill*, 495 p., \$4. This book offers an approach to the science of microscopic life somewhat different from that of most books in its general field. These usually have a single outlook—medicine, plant pathology, dairy science or what not—whereas Prof. Lutman's effort is to present bacteria, yeasts and the lower fungi as organisms facing similar life problems and solving them by more or less similar means. The special aspects of each type find adequate treatment after the fundamental biological phenomena have been adequately treated.

*Microbiology*

*Science News-Letter*, August 9, 1930

**THE EDUCATION OF CHILDREN**—Alfred Adler, Translated by Eleanore and Friedrich Jensen—*Greenberg*, 309 p., \$3.50. Dr. Adler's eager interest in children and his sympathy for their problems gives such a warmth to his writing that this book becomes more than "just another," stressing the importance of mental development. The abnormal child is given some attention in the volume, but the psychologist is equally interested in the small but significant troubles of the average youngster.

*Psychology—Education*

*Science News-Letter*, August 9, 1930

**SOUTH AMERICA**—Clarence F. Jones—*Henry Holt*, 798 p., \$6. Every country of South America is described politically and economically from a historical standpoint, as well as industrially and commercially. The author is professor of economic geography at Clark University, and the book is based upon travel and research in South America.

*Geography*

*Science News-Letter*, August 9, 1930

**STUDIEN ZUR EPIDEMIOLOGIE, OEKOLOGIE UND PHYSIOLOGIE DER AFRIKANISCHEN WANDERHEUSCHRECKE**—F. S. Bodenheimer—*Paul Parey, Berlin*, 123 p. The problem of locusts has been a life-and-death matter in the East ever since the days of the Exodus, yet comparatively little scientific work has been done on it. In this publication, Dr. Bodenheimer and his colleagues at the Hebrew University at Jerusalem make substantial contributions toward its solution.

*Entomology*

*Science News-Letter*, August 9, 1930